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(54) PRODUCTION OF BORON CARBIDE BASED POLYCRYSTALLINE HIGH DENSITY MOLDING BY PRESSURELESS SINTERING

(57)Abstract:

PURPOSE: To provide an improved process for production by pressureless sintering of a polycrystalline high density molding consisting of boron carbide, metal diboride and carbon.

CONSTITUTION: This process consists of the stages including the following stages: a) the stage of preparing a mixture by homogeneously mixing pulverulent boron carbide with at least one pulverulent monocarbide of an element selected from the group of titanium, zirconium, hafnium, vanadium, niobium and tantalum in an amt. corresponding to from 2% to 6% by weight of free carbon, based on the total weight of the boron carbide; b) a stage of molding the mixture to an intermediate molding having a density of at least 50% of the theoretical density; c) a stage for heating the thus resulted intermediate molding from about 800° C up to 1500° C while expelling oxygen and holding the intermediate molding for 10 to 120 minutes within the temp. range and d) a stage for sintering the intermediate molding by heating the intermediate molding from 2100 to 2250° C.

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